ABSTRACT OF THE DISCLOSURE

According to one embodiment, a structure for monitoring a process step may include an etch stop layer (**102**) formed on a substrate (**104**) and a trench emulation layer (**106**) formed over an etch stop layer (**102**). Monitor trenches (**108**) may be formed through a trench emulation layer (**106**) that terminate at an etch stop layer (**102**). Monitor trenches (**108**) may have a depth equal to a trench emulation layer (**106**) thickness. A trench emulation layer (**106**) thickness may be subject to less variation than a substrate trench depth. A monitor structure (**100**) may thus be used to monitor features formed by one or more process steps that may vary according to trench depth. Such process steps may include a shallow trench isolation insulator chemical mechanical polishing step. In addition, or alternatively, a monitor structure (**100**) may be formed on a non-semiconductor-on-insulator (SOI) wafer, but include SOI features, providing a less expensive alternative to monitoring some SOI process steps.